PENTAX K-7

Everything you need to know... and then some.

Yvon Bourque

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I am pleased that you purchased one of our "***Pentax K-7 – Everything you need to know…..and then some***" book. As an enthusiastic photographer for many years, I have had many Pentax cameras. My first "new" camera was a Pentax Spotmatic, purchased when I was still in Junior High.

When Pentax stepped into the Digital SLR market, I was delighted. Their first few DSLRs (The *ist series) were the smallest DSLRs on the market but were not particularly special with the 6MP CCD. When the *K10D* was introduced, everything changed and Pentax was suddenly a major player. The *K10D* was a breakthrough, in my opinion. It had the capabilities of Professional DSLRs with the price of entry-level DSLRs. It had some unique features found nowhere else at any price. In January of 2008, Pentax announced the *K20D*. It was not a revolution as the *K10D* was, but it certainly was an evolution of the revolution. The *K200D* and the *K2000/KM* followed with no exceptional or marginal improvements. On May 20, 2009, Pentax made history again by introducing the Pentax *K-7*. This time, it is definitely another revolution, and maybe bigger than the *K10D* was when introduced. Once again, Pentax engineers have pushed the envelope and designed a DSLR with more features than any camera in it's price range.

This book is not about me as a photographer. It is about you and what information you will need when using this marvel of engineering that the *K-7* is. The book complements the Pentax user's manual and explains in simple terms how to use the camera. It contains techniques, shortcuts, explanations, tips, examples and photographic information applicable to the *K-7* as well as other DSLRs in general.

We opted to publish the book ourselves, just as we published the previous books. This time we offered the *K-7* book in a downloadable form only. We save production costs and you save money, and get you book much quicker.

Your feedback is always important to us. As we get feedback from our customers, we can update the book according to what readers wants. We have incorporated many of your suggestions from the previous books into this *K-7* book.

Our Website is: **http://www.pentaxdslrs.com**.

Our Blogsite is: **http://pentaxdslrs.blogspot.com/**

From one Pentax user to another, thank you again for your purchase,

Yvon Bourque

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Yvon Bourque
Pentax *K-7*
Everything you need to know
…..and then some

Foreword

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About the Author:

Back when most of his classmates were dealing with growing up; the author was nurturing a serious enthusiasm for photography. Son of a Montreal carpenter, he enrolled in photography courses, soaked up theory, bought his first camera, shot rolls of film, and learned how to develop and print. All this was before leaving junior high school. He had many dreams and like many aspiring young photographers, he dreamed of getting assignments from National Geographic and traveling the world over.

Decades later, the road has led him into other directions. With the responsibilities of a career and family, his plans were altered, but only slightly. The enthusiasm of the young boy and the love of photography are still strong. He never abandoned his photography dreams. One of his biggest frustrations is that he does not have enough time for more.

He has used all types of photography formats, but now, uses Digital SLR cameras almost exclusively. He states "Technology is good. The freedom to unleash one's creativity has never been greater. You either follow the flow of progress, or you are left behind".

His work has given him the opportunity to travel across the United States, Canada, Mexico and the Caribbean. His photography career never took-off as he had dreamed, but as a second career, he has spent countless hours during the past decades capturing not only the beauty and the people of America but other countries as well. He has won numerous awards, written articles and books on his beloved subject, and sold his work throughout the places he lived.

Where does a tireless hobbyist go from here? Like all other areas of our modern life, photography has gone digital. As an artist, he is fascinated with all of the new digital possibilities. He is finally contemplating the idea of replacing his present career shingle for one stating Yvon Bourque, Photographer. "With perseverance, all is possible."

My preferred editor:

This is my wife Anne. This book and all my other books would not have seen the light of day without someone editing the manuscripts. She wanted the book to be as "user friendly as possible". Whenever she didn't like the way something was explained, I had to redo it. She is responsible for the great number of pictures and illustrations in this book. I tell you, having your spouse as editor is very demanding… having her on the readers' side is the best thing that could have happened to you.

Thank you for your patience Anne. It's not easy to put up with a workaholic.

Yvon

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Foreword

This book was written for all users of the Pentax *K-7*. No matter what your experience level is, you will find something useful in this book.

A few years ago, most amateur and professional photographers alike, were using film cameras for their picture taking. Within the film cameras, several formats were used. The general public and a good number of professionals used the 35mm format. A select few preferred using medium and large format cameras mainly because of the size of the negatives. Larger negatives rendered better pictures, better colors and fantastic enlargements. Film cameras were very sophisticated and took great pictures. It's no wonder that almost every family owned a 35mm camera.

When the first digital cameras started to appear, the quality was less than desirable, but the potential was certainly there. For several years, many photography magazines were debating whether or not the digital cameras would replace film based cameras. Over time, the quality has so improved, that today, in our opinion, digital cameras exceed the quality of film based cameras. Of course, we are comparing the 35mm and medium format film cameras with the new breed of Digital Single Lens Reflex (DSLR) cameras. It has taken more than a decade to get where we are today, but digital is here to stay.

It wasn't all that long ago when a top DSLR with a sensor in the 2 megapixels range was costing the consumers nearly five thousand dollars or more. For a while, as soon as you spent thousands of dollars for a top-of-the-line digital camera, it was replaced within months with a new and better model. I am sure that some of you remember these times of tribulation.

The market, as this book is written, has stabilized, and the norm in a non-professional DSLR is now around the 12 to 15 megapixels, 20 megapixels and above for professional DSLR cameras. All are enough to produce very good enlargements up to about 16" x 20" and beyond. Full size (roughly 36mm x 24mm, or the same size as a 35mm frame) sensors are available on many DSLRs. The perceived advantage of full frame is that you can use your 35mm format lenses without any correction factor. Pentax is using a smaller sized sensor (APS-C roughly 24mm x 16mm) requiring a correction factor of around 1.5 to 35mm format lenses. If you

shoot with telephoto lenses, it works to your advantage as a 200mm f/2.8 lens acts like a 300mm f/2.8 telephoto at no additional cost. We know that a 300mm f/2.8 telephoto lens is very expensive. The downside is that wide angle lenses will no longer perform as such, but the maximum aperture will remain. Today most companies manufacture super-wide lenses that, when converted to a 1.5x factor, still gives you a nominal wide angle comparable to a 20mm on up in the 35mm format. Wide angle lenses are cheaper than telephotos. In our opinion, full-frame sensors are over-rated, especially with the new **K-7**. The **K-7** uses a newly Pentax/Samsung developed 14.6 megapixels CMOS sensor, redesigned from the ground up for the **K-7**, drastically reducing the digital noise at high ISO. It also allows sizeable cropping.

Unless you want to print your pictures billboard size at 300dpi resolution, the current CMOS sensor will be sufficient to produce stunning pictures and enlargements that were only dreamed of a few years ago. The CMOS sensors use less power and produce very little digital noise at higher ISO.

In the past few years, we have seen many brand names in the camera field disappear. Some acquisitions and mergers took place and some companies just abandoned the competitive digital photography market altogether.

In the past decade, two companies appear to have dominated the market; and indeed still do. There is no doubt that they manufacture good products, but the brand loyalty and recognition may have played an important role in their success.

With Pentax introducing the **K-7,** the gap between these two giants has been reduced and there is no doubts that Pentax will once again take a greater share of the market with good products. Pentax took a while before producing its first Digital Single Lens Reflex (DSLR). Some changes are about to happen. Pentax is not new to changing the photographic world. Pentax pioneered the Single Lens Reflex (SLR) camera in 1952 with the introduction of the Asahiflex I camera. In 1954, the Asahiflex II was introduced with the first instant mirror return. In 1964, Pentax did it again by introducing its Pentax Spotmatic camera featuring the first through-the-lens (TTL) metering system in a Pentax camera. A version of the Pentax TTL system is now found in virtually all 35mm SLR cameras and applied to the design of DSLR as well. Many of us learned photography by using the ever popular Pentax K1000.

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The new Pentax *K-7* is aimed at advanced amateurs to professional photographers but can certainly be used by entry-level photographers as well. It's a camera that will help expand your photographic talents. It can be as easy to operate as a point and shoot, but it also has all of the professional features that you will demand as your experience grows. All Pentax lenses ever made will work with the *K-7.* It is often said that the glass are the most important factor in taking great photographs. There are many reasons to choose the *K-7* for your digital photography endeavors. We have dedicated a whole section on the camera's features alone.

This book is organized in the following way:

Foreword and Table of contents

Chapter 1 "**Know your *K-7***"is dedicated to the general specifications of the *K-7* and the review of the many functions of the camera in general.

Chapter 2 "**How to use your *K-7***" explains the multiple functions of the *K-7*, and includes many pictures and illustrations. It clarifies the use of the camera's functions from screen menus to actual buttons and switches. There are no simple icons on this camera such as scene mode, night mode, etc, as found on most entry level cameras. We think that you would find these icons unproductive after a short period of time. The advantage of the camera is that you can tailor its operability to your liking or photographic skills. The three basic shooting elements; Aperture, Shutter Speed and the Sensitivity (ISO) are all adjustable with the *K-7* in ways that will make the competition rethink their approach. It will not be long before other manufacturers try to mimic the *K-7*.

Chapter 3 "Processing your *K-7* Images" is a brief review on how to manipulate your images within the camera as well as with a computer. This topic alone is worthy of a book by itself, and there are indeed many books on Digital Imaging readily available. Pentax software and other digital imaging software such as Photoshop CS3®, Lightroom®, and Elements® are briefly visited. The possibilities are endless and are only limited by your ability or desire to manipulate and post-process your images.

Chapter 4 "**The Pentax System**" is dedicated to the Pentax System. Pentax is truly the only manufacturer with 100% backward compatibility. It includes all lenses ever manufactured by Pentax, both 35mm and medium formats. There are about twenty four million genuine Pentax lenses out there. There are probably that many more lenses manufactured by companies such as Tamron ™, Sigma ™, Tokina ™ and other brands. Currently available accessories are also covered and explained in this chapter.

Chapter 5 "**Photography Techniques**" is full of techniques and example pictures along with some suggestions on what to take pictures of.

Chapter 6 "HD Video recording" is dedicated to the new HD video capabilities of the *K-7*. This new generation of DSLRs with still pictures and HD video capabilities is changing the digital photography landscape. It opens up new possibilities. It is going to be very popular for documenting and photojournalistic approach to your undertakings.

Appendix section includes menu setting tables, factory default tables, lens compatibility chart, mount types, and an index to guide you through this book.

Addendum is comprised of additional *K-7* functions, last minute changes, revisions to software or firmware and any additional information found to be useful.

Check our Pentax Blog; we constantly post articles about Pentax products.

http://pentaxdslrs.blogspot.com/

The Blogspot
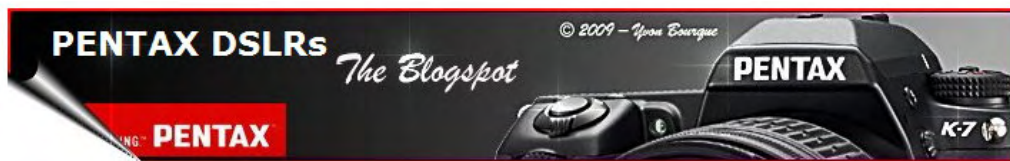
We also have our website for purchasing our books and downloading important information or samples.

http://www.pentaxdslrs.com/

Website

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This is probably the best tool I have, other than the Pentax DSLRs. Lenses and equipment. It allows me to get to places I wouldn't be able to get to otherwise. If you ever owned a Keep, you already know that it is customary to name it, just as you name a boat.

Her name is "**Ms. J. Peggy**". Here is how she got her name:

*My two principal hobbies are photography and four wheeling. I wanted a name that would reflect both hobbies. The Jeep came unaltered from the factory and we worked on improving it and finishing it the way it is today. We lifted the whole Jeep 6", put a new motor, new coil-spring suspension, 35" monster tires, etc. It's sort of parallel to digital photography, whereas your original pictures can be taken in "RAW" format and after working on the images, they can be saved in "JPEG" format. My Jeep was originally in "RAW" form from the factory but after altering it, it became like a "JPEG". So I decided to name my Jeep Miss" J. Peggy". This is an acronym for "Jeep Photographer Environmentally Going Green...Yes!". For short, her nickname is really **Miss Peggy**. It fits both of my hobbies and my views about the environment. I always drive on assigned trails, and usually pick up the trash that other people left behind. It's our only earth and we better take care of our little planet.*

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Chapter 1

Know your K-7

*The Pentax **K-7** system*

Nomenclature
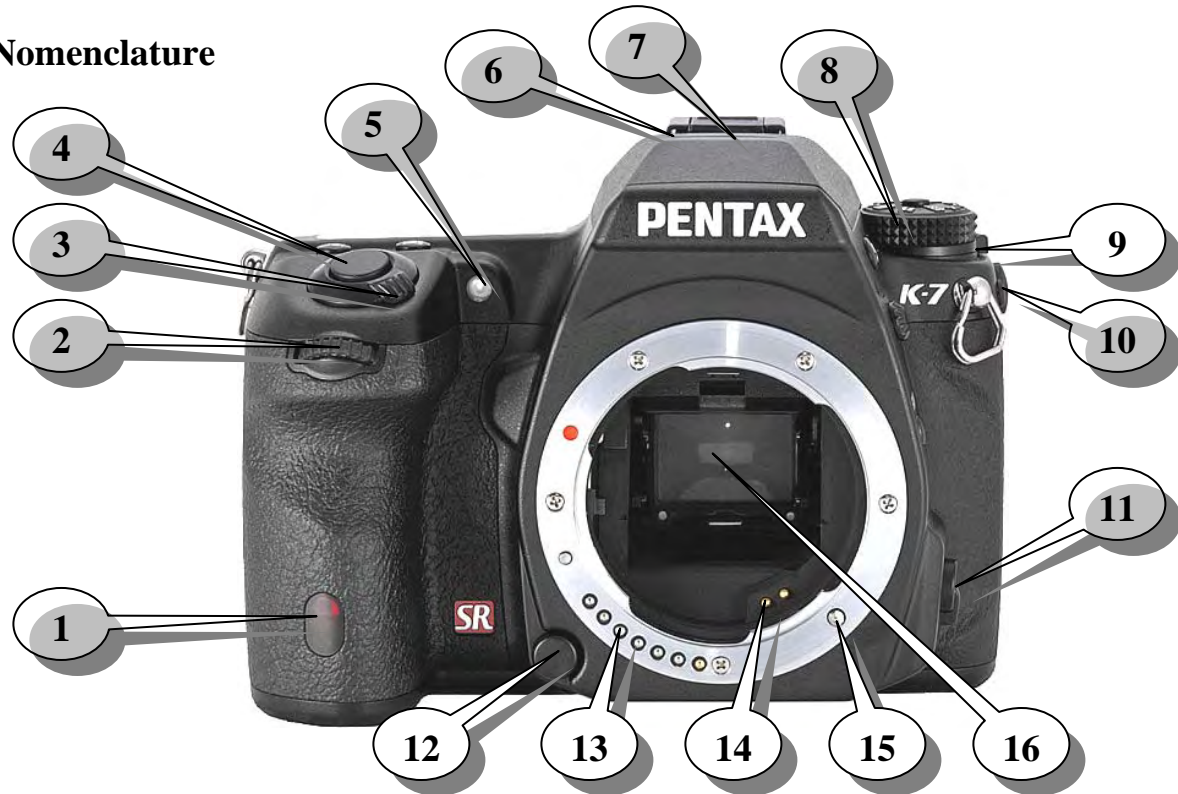
1.	**Self-timer lamp**	Blinks for self-timer. Serves as remote control receiver.
2.	**Front e-dial**	Sets shutter speed, EV compensation values. (Customizable)
3.	**Main Switch**	Rotate to turn camera on or off and for depth of field preview.
4.	**Shutter release**	Press halfway to compose image, press fully to take picture.
5.	**AF Assist Light**	Lights up when AF is difficult to attain in darker scenes.
6.	**Built-in flash**	Retractable P-TTL with guide number 13 @ 100/m.
7.	**Hot shoe**	Camera also uses external flash and wireless flash unit.
8.	**Mode dial**	Changes the exposure mode.
9.	**Metering mode lever**	Changes metering mode; Multi-segment, Center-weighted, Spot.
10.	**Strap Lug (2)**	Loop for the camera strap.
11.	**Focus mode lever**	Switch between Autofocus single, Continuous and Manual focus.
12.	**Lens unlock button**	Press to install or remove lens.
13.	**Lens info contacts**	Exchanges information between the lens and the K-7.
14.	**SDM contacts**	Allows AF with the Supersonic Drive Motor (**SDM**) lenses. Also used for power zoom on some older FA lenses.
15.	**AF coupler**	Handles the AF drive between the lens and *K-7.*
16.	**Mirror**	Allows Through The Lens (**TTL**) metering and focusing.

Chapter 1 - Know your *K-7*
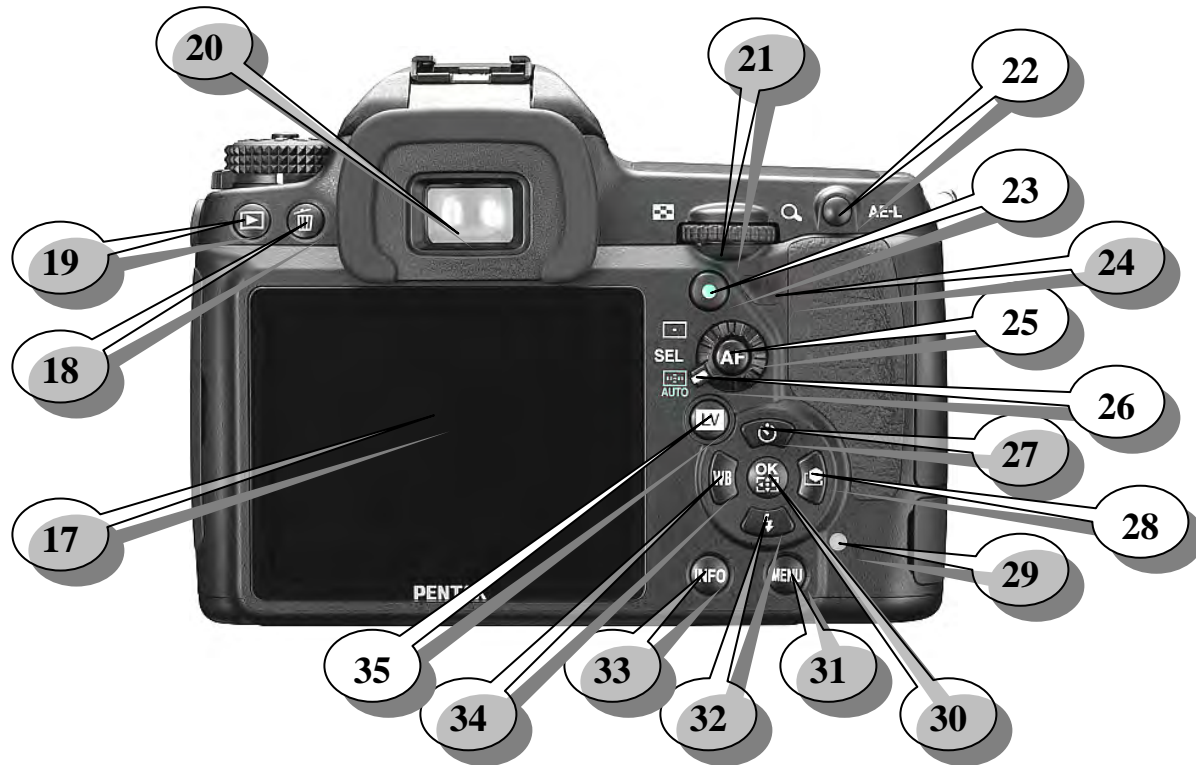
17.	**3" LCD monitor**	Displays exposed pictures, allows access to menus.
18.	**ERASE button**	Press to delete current picture.
19.	**Play button** ▶	Press to see pictures on LCD screen
20.	**Viewfinder**	If you don't know what this is for, abandon photography. ☺
21.	**Rear e-dial**	Sets aperture and sensitivity values. Customizable.
22.	**AE-L button**	Press to lock current exposure before shooting.
23.	**Green button**	Always reset exposure mode to Automatic Exposure.
24.	**Rear Self-timer lamp**	Blinks for self-timer. Serves as remote control receiver.
25.	**AF button**	Press to focus on target prior to metering.
26.	**AF point switching**	Rotate to select focusing area; Auto • Select • Center.
27.	**Four-way Controller** ▲	Part of four-way controller up button▲ / Access to Drive Mode.
28.	**Four-way Controller** ▶	Part of four-way controller right button▶ / Access Custom Image
29.	**Card access lamp**	Illuminates or blinks when SD card is accessed.
30.	**OK button**	Press to save setting from menu / Selects metering point.
31.	**Menu**	Press to activate Menu modes on the LCD monitor.
32.	**Four-way Controller** ▼	Part of four-way controller down button▼ / Access Flash settings
33.	**Info button**	Press to view info of current photo on the LCD.
34.	**Four-way Controller** ◀	Part of four-way controller left button◀ / Access **WB** settings
35.	**Live-view button**	Initiate Live-view mode.

36. Diopter adjustment   Adjusts the viewfinder to suit your eyesight.
37. EV compensation   Press to adjust EV compensation with rear e-dial.
38. ISO button   Press to adjust / change ISO settings with rear e-dial
39. LCD Panel   Displays current camera settings and information

40. Cover unlock tab   Pull and turn to lock / unlock battery cover.
41. Battery housing cover   Batteries are housed here.
42. 1/4" Tripod Socket   Attachment for tripod.
43. Battery Grip connector   Connections permitting the use of the D-BG4 battery grip

Chapter 1 - Know your *K-7*
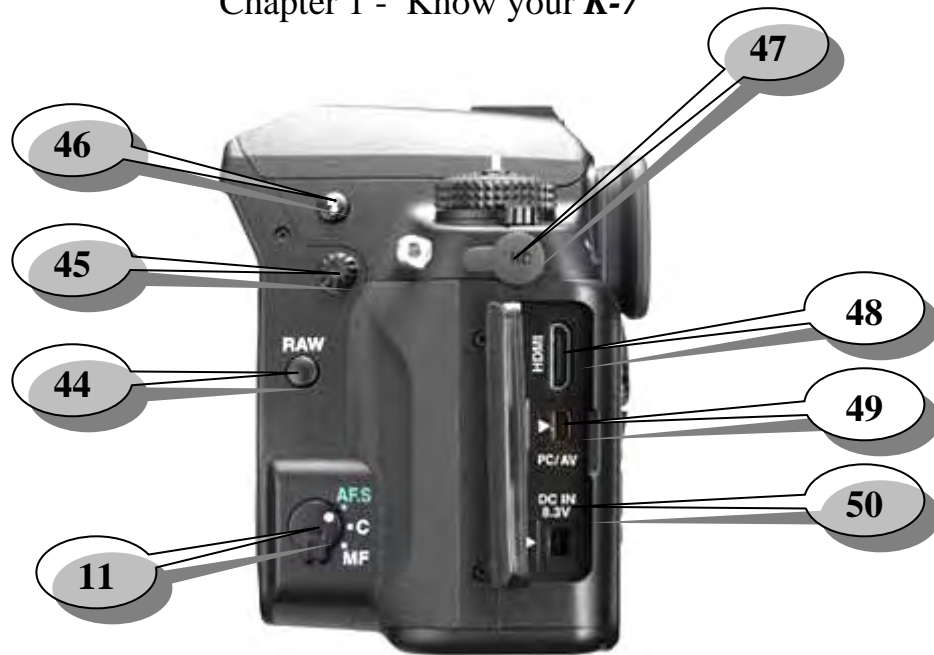
44.	**Raw button**	Press on-the-fly to shoot RAW or RAW + JPG (Customizable)
45.	**X-Sync socket**	For using studio lighting – Sync to 180th sec.
46.	**UP button**	Press the UP button to pop the built-in flash up.
47.	**Microphone input**	Stereo connection socket for external microphone.
48.	**Mini HDMI output**	High-Definition Multimedia Interface.
49.	**USB Video Terminal**	Connects DSLR to computer for data transfer.
50.	**DC Input terminal**	For connecting power sources other than batteries.
51.	**SD card cover**	SD card compartment located under this cover.
52.	**Cable switch terminal**	Input for remote control device.
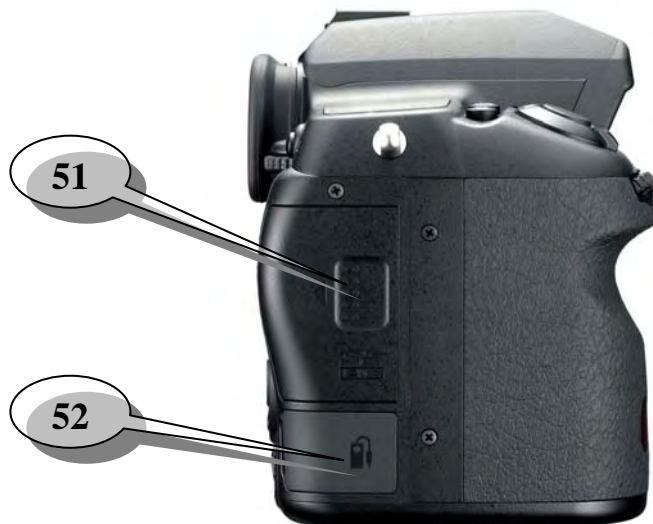
Information you see in the viewfinder

Viewfinder available Information in details:
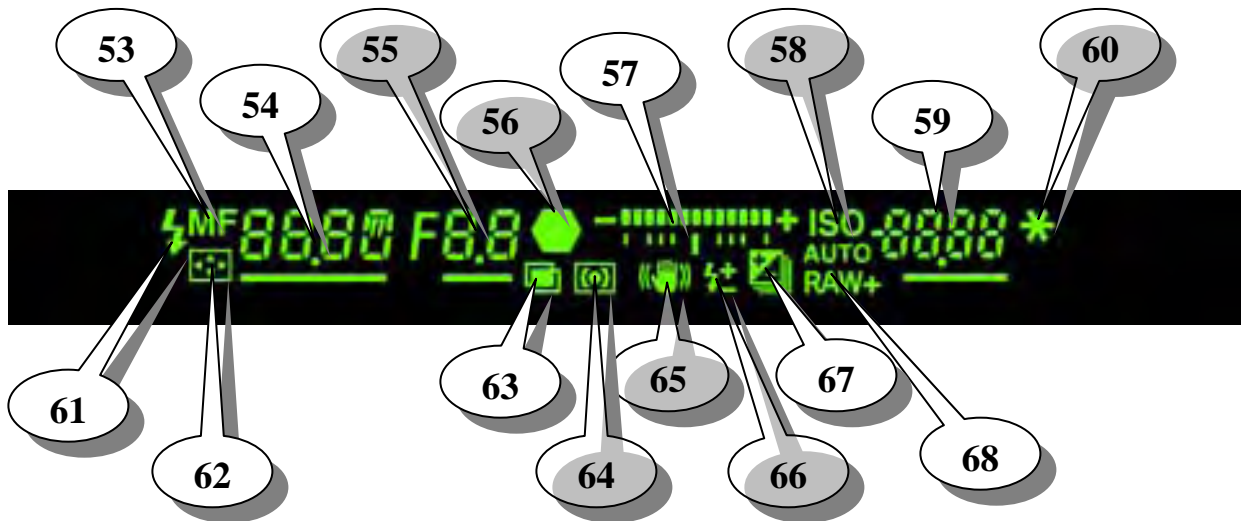
53. Manual Focus	Appears when manually focusing.
54. Shutter speed	Shutter speed, underlined when adjustable with e-dial.
55. Aperture Value	Aperture, underlined when adjustable with e-dial.
56. Focus Indicator	Appears when image is in focus.
57. EV Bar	Shows EV compensation values
58. ISO display	Shows the ISO in Manual or Auto
59. Sensitivity	Shows the ISO being used / Number of recordable images left.
60. AE Lock	Appears during AE Lock
61. Flash status	Appears when flash is available and blinks if flash recommended.
62. SEL Focus in use	Appears when AF Selections enabled by pressing the OK button.
63. Multi-exposure	Appears when Multi-exposure enabled.
64. Metering method	Shows metering method, Multi-segment, Center-weighted or Spot
65. Shake reduction	Appears when Shake reduction enabled.
66. Flash exposure comp	Appears when flash compensation used.
67. EV compensation	Appears when EV comp available or used, or when bracketing.
68. RAW/Raw+	Appears when shooting RAW or RAW+

LCD Panel available information in details:

69. Flash Mode   Built-in flash ready. flash needed, it will flash on and off.

70. Flash Mode	Trailing curtain Sync enabled.
71. Flash Mode	Auto-Flash Discharge enabled.
72. Flash Mode	Slow-Speed Sync enabled.
73. Flash Mode	Red-eye reduction function enabled.
74. Aperture	Shows aperture being used.
75. Shutter Speed	Shows Shutter Speed being used.
76. Mirror Lock-up	Indicates mirror-Lock-up shooting.
77. Multi-Exposure	Indicates Multi-Exposure being used.
78. EV Bar	Shows EV compensation to over or under exposure.
79. Flash Exp Comp	Indicates that flash exposure compensation is used.
80. EV Compensation	Shows that EV compensation or Multi-Exposure is used.
81. Battery Level	Indicates the battery condition.
82. ISO/Auto ISO	Appears when sensitivity is displayed.
83. ISO Value	Shows the ISO being used.
84. Remaining Images	Shows remaining storage capacity or USB connection mode.
85. RAW File Format	Displays when RAW or RAW + being used.
86. Drive Mode	Single frame or continuous shooting indication.
87. Drive Mode	Remote Control being used.
88. Drive Mode	Self-Timer engaged.

Some of the above settings also appear in the Viewfinder.

© 2009, Yvon Bourque – It's all about lighting.
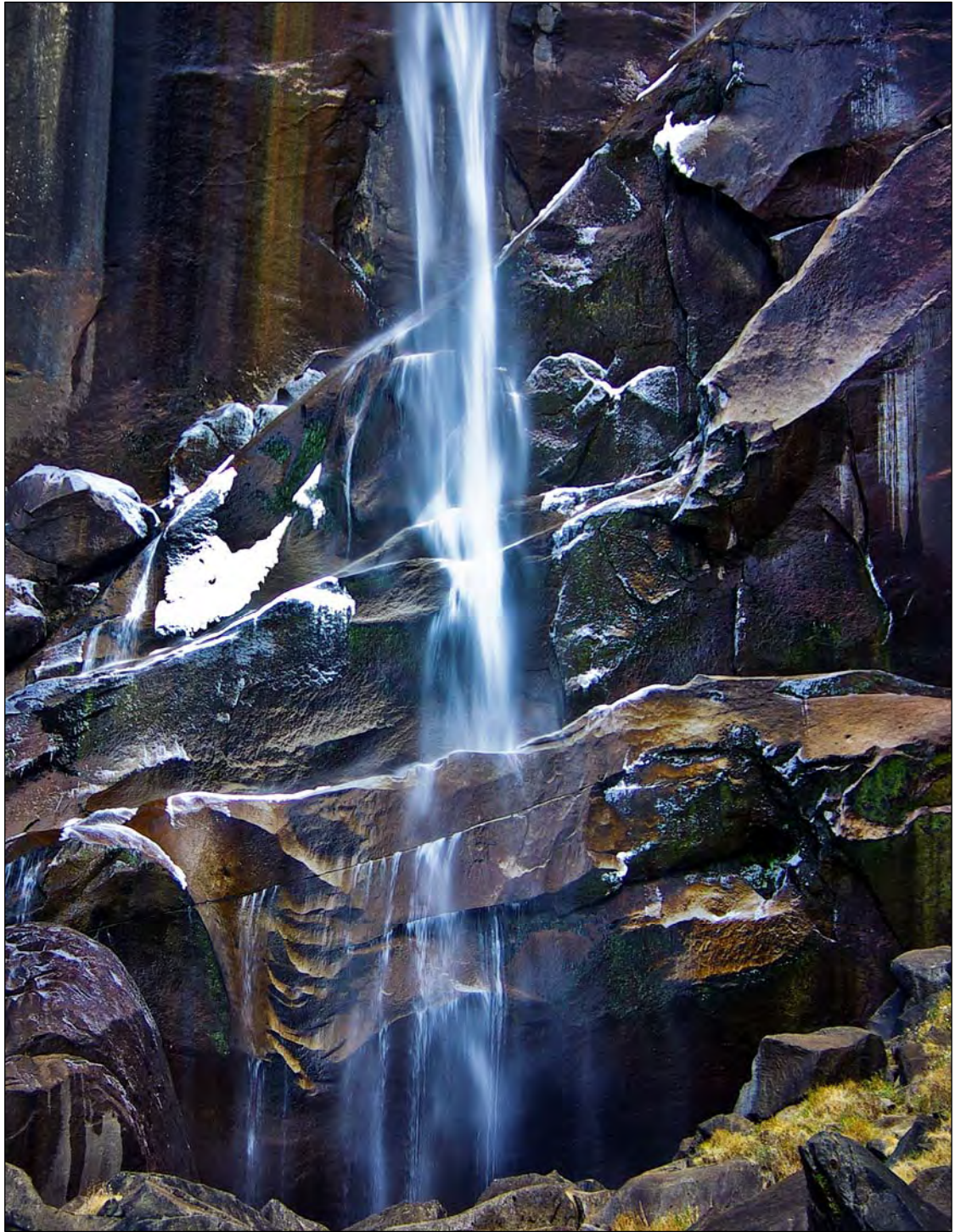
© 2009, Yvon Bourque – Use a tripod, a slow shutter speed and neutral density filters to achieve this effect. With the K-7, you can use the multi-exposure to achieve the same results.

© 2008, Yvon Bourque – Don't be afraid to use a different "point of view".
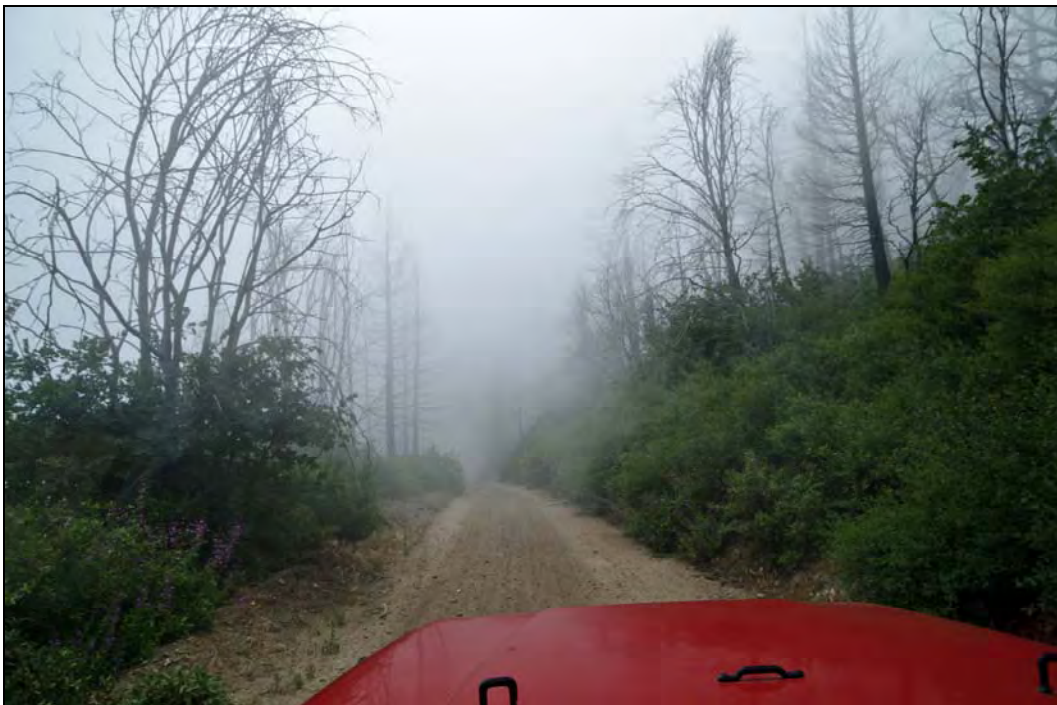
K-7 TECHNICAL SPECIFICATIONS

Type:
- Digital SLR

Sensor:
- Type - CMOS with primary color filter and integrated Shake/Dust Reduction sensor movement system
- Size - 23.4 x 15.6mm
- Color depth - 8 bits/channel JPG, 12 bits/channel RAW
- Effective pixels - 14.6 MP
- Total pixels: 15.07 MP
- Recorded resolutions - Still: 14M 4672x3104, 10M 3936x2624, 6M 3072x2048, 2M 1728x1152
- Movie (resolution/FPS): 1280x720p30, 1536x1024p30, 640x416p30
- Quality levels: **** Premium, *** Best, ** Better, * Good
- Dust Removal - Supersonic vibration to low pass filter

Lens Mount:
- Type/construction - PENTAX KAF2 bayonet stainless steel mount
- Usable lenses - PENTAX KAF3, KAF2, KAF, KA,K and 35mm screw mount
- 645/67 med format lenses useable w/ adapter and/or restrictions
- SDM function - Yes
- Power zoom function: Yes

Focus System:
- Type - TTL phase-difference 11 point (9 cross) wide autofocus system (SAFOX VIII+)
- Focus modes - AF Single (w/ focus lock), AF Continuous, Manual; Focus point adjustment - Auto, user-selectable, center
- AF assist - Yes, via dedicated AF assist lamp with SAFOX VIII+ system

Viewfinder:
- Type - Pentaprism
- Coverage (field of view): 100%
- Magnification - 0.92X (w/ 50mm F1.4 at infinity)
- Standard focusing screen: Natural-Bright-Matte III
- Diopter adjustment: -2.5 to 1.5
- Depth of field preview - Optical (diaphragm stop down), Digital

LCD Monitor:
- Type - 3.0" TFT IPS (In Plane Switching) color LCD with brightness/color adjustment and AR coating

- Resolution - 921,000 dots
- Wide angle viewable - Yes

Built-in Flash

- Type: Retractable P-TTL popup flash
- Guide number: 13 (100/m)
- Coverage: 28mm wide angle (equivalent to 35mm)
- Flash modes: on, redeye, slow sync, slow sync + redeye, trailing curtain sync, wireless; Flash exposure compensation: -2 to +1 EV in 1/2 steps

External Flash:

- Flash modes - On, redeye, slow sync, slow sync + redeye, trailing curtain sync, wireless
- Flash exposure compensation: -2 to 1 EV in 1/2 steps

Storage Media:

- Internal memory: n/a
- Removable memory: SD, SDHC

Interfaces:

- Ports: USB 2.0 hi-speed, AV out, HDMI out, DC in, cable switch, 3.5mm stereo microphone
- Video out: HD (1080i30, 720p30, 480p30), NTSC, PAL
- Printer interfaces: n/a

Power Supply:

- Power source: Rechargeable Li-Ion battery D-LI90
- D-BG4 Battery Grip (optional) for second D-LI90 battery or 6X AA batteries
- Recordable images: Approx 980 (approx 740 w/ 50% flash, CIPA)
- Playback time: Approx 440 min
- AC adapter available: Yes (optional)

Shutter:

- Type: Electronically controlled, vertical run, focal plane shutter
- Shutter speed: 1/8000 to 30 sec, bulb

Physical Specifications:

- Body dimensions (W x H x D): 5.1 x 3.8 x 2.9"
- Body weight, without battery or removable memory - 22.9 oz, Loaded and ready - 26.5 oz
- Construction material(s): Magnesium alloy shell over stainless steel chassis
- Operating temperature: 14-104°F (-10 to 40°C)

Image Stabilization:

- Type - Sensor-shift Shake Reduction with rotational compensation (4 stops max)
- Electronic level function: Yes, verification via viewfinder and top LCD panel

Metering System:

- Type-TTL open-aperture 77 segment metering
- Sensitivity range: EV 0 to 21 (ISO 100, 50mm F1.4)
- Multi-segment: Yes, 77 segments
- Center weighted: Yes; Spot: Yes
- Exposure compensation: +/- 5 EV (1/3 and 1/2 steps)
- Exposure lock: Yes; Exposure bracketing: Yes, 3 or 5 frames, up to +/- 2 EV (1/2 or 1/3 steps)

ISO Sensitivity:

- Auto - ISO 100-3200 (1, 1/2, 1/3 steps)
- Bulb mode up to ISO 1600
- Expanded range available to ISO 6400
- Auto ISO range selectable
- Manual: ISO 100-3200 (1, 1/2, 1/3 steps)
- Bulb mode up to ISO 1600
- Expanded range available to ISO 6400

White Balance:

- Auto preset modes
  - Auto
  - Daylight
  - Shade
  - Cloudy
  - Fluorescent (D, N, W, L)
  - Tungsten
  - Flash
  - CTE
- Manual mode(s)
  - Yes, manual and 3 color temp selections available; * WB fine adjustment

Capture Modes:

- Mode selection
  - Green
  - Program (P)
  - Sensitivity Priority (Sv)
  - Shutter Priority (Tv)
  - Aperture Priority (Av)
  - Shutter and Aperture Priority (TAv)
  - Metered Manual
  - Bulb
  - X-Speed
  - USER

- o Movie
- Green simplified mode available: Yes; P/A/S/M/B: P, A, S, M, B (extended modes Sv, TAv)
- Date stamp: n/a
- Digital filters (capture):
- Custom Image Function includes Bright, Natural, Portrait, Landscape, Vibrant, and Muted modes, each with gamut radar and fine adjustment of saturation, hue, high/low key, contrast, and sharpness (regular and fine adjustment scales). Monochrome mode includes adjustment for filter effects (green, yellow, orange, red, magenta, blue, cyan, infrared), toning (sepia warm/cool), high/low key, contrast, and sharpness (regular and fine adjustment scales).
- Other capture filters include Toy Camera, Retro, High Contrast, Extract Color, Soft Focus, Starburst, Fisheye, Custom Filter.; Data record: Folder name (standard, date), file name (standard, customizable), embed copyright

Drive Modes:

- Mode selection:
  - o Single
  - o Continuous (Hi, Lo)
  - o Self-Timer (12s, 2s)
  - o Remote (0s, 3s, continuous)
  - o Bracketing (standard, timer, remote)
  - o Mirror Lockup (standard, remote)
  - o HDR Capture
  - o Multi-Exposure
  - o Interval
  - o Continuous FPS; - 5.2 FPS (40 JPG Continuous Hi, 15 RAW PEF, 14 RAW DNG)
  - o 3.3 FPS (unlimited JPG Continuous Lo, 17 RAW PEF/DNG)
  - o Self-timer: Yes (12s, 2s)
  - o Remote control: Yes, infrared (0s, 3s, continuous) and cable switch

Playback Modes:

- Mode selection:
- One Shot (no data, basic data, full data, color channel histogram)
- Multi Image Display (4, 9, 16, 32, 81 thumbnails)
- Calendar Filmstrip
- Folder
- Magnification
- Select & Delete
- Movie Playback (no data, basic data, full data)
- Mode pallet: Image Rotation, Digital Filter, Resize, Cropping, Slideshow, Save as Manual WB, RAW Development, Index Print, Image Comparison, Protect, DPOF
- Magnification: Up to 32X, scrollable

- Digital filters (playback): Toy Camera, Monochrome (filter effects, toning), Retro, Color (6), High Contrast, Soft Focus, Extract Color (6), Starburst, Water Color, Fisheye, Pastel, Slim, Miniature, HDR, Base Parameter Adjustment, Custom Filter

File Formats:

- Still: RAW (PEF, DNG), JPG (Exif 2.21), DCF 2.0 (design rule for camera file system), DPOF, Print Image Matching III
- Movie (compression): AVI (Motion JPG)

Custom Functions:

- Functions available: 37

Computer Requirements:

- For device connectivity. Bundled software requirements may vary.
- Windows: Windows XP/Vista, USB 2.0 port
- Mac: MacOS-X 10.3-10.5, USB 2.0 port

What Is Special About the *K-7*?

The most significant features of the Pentax *K-7* that have never been offered before in any K series digital camera, and in some case any camera, include:

- A compact, Stainless steel frame with magnesium alloy body that is one of the smallest in the advanced photo enthusiast category to reduce bulk and allow users to travel light while maintaining durability and build quality (seven percent smaller than the *K20D* and up to 25 percent smaller than other cameras in the same class). It is undoubtedly the best Pentax DSLR yet. As the successor of the *K20D*, you can be assured that it has advanced features not found on other brand of DSLRs. It's a Pentax Tradition.
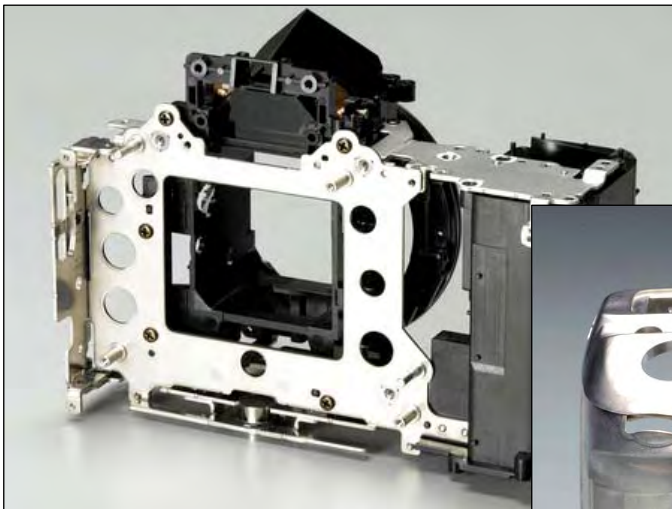
- A new 14.6 megapixel CMOS sensor rebuilt from the ground up to minimize noise, adds four channel output for fast image capture, and the ability to capture HD quality movies. It is the ideal combination of resolution and file size, allowing very large (poster size and larger) prints and crop ping flexibility.
- A new 77-segment metering system quickly and accurately determines exposure for even the most complex and dynamic lighting situations.
- A new HD Movie capture features adjustable quality and resolution settings, aperture control, as well as mechanical Shake Reduction, and an external microphone terminal for recording stereo sound.* The K-7 will capture video at the default standard of 1280x720 resolution with a 16:9 aspect ratio (equivalent to 720p), 1536x1024 resolution with a 3:2 aspect ratio, or 640x416 resolution with a 3:2 aspect ratio (equivalent to VGA quality), all shot at 30 frames per second.
- An HDMI port with selectable output resolution (1080i, 720p, 480p, and auto) offers high resolution playback of images and video on modern high definition TV's.
- A Dedicated AF-assist lamp further improves autofocus response and accuracy in low light conditions.
- An Electronic Level function ensures that images have truly level horizons to minimize post-capture editing.
- An innovative in-camera Lens Correction function that electronically adjusts for Distortion and Lateral Chromatic Aberrations to maximize image quality with DA series lenses.
- A dedicated Mirror Lock-up function eliminates image blur due to mirror movement during long exposures.
- A High Dynamic Range (HDR) image capture mode captures three images then combines them in camera to widen the exposure gamut to bring out details in all exposure areas of images.

- A composition adjustment feature in Live View allows minor shifts in the framing and composition of images using the Shake Reduction mechanism without having to physically move the camera. This feature is ideal for tripod use.
- A programmable embedded copyright function preserves artistic integrity and image ownership during capture via a keypad that may record ownership in metatag data.

A variety of K series camera features that are significantly improved in the Pentax *K-7* include:

- A striking 3 inch LCD with 921,000 dot resolution is perfect for detailed image or movie capture and review using the Live View function.

  - A weather, dust and cold resistant (to 14° F or -10° C) body makes the *K-7* the perfect camera for use in any environment, inside the studio or when travelling in any weather.
  - Fast 5.2 frame-per-second shooting with a new PRIME II Image processing engine, which features fast circuitry and 4 channel output that is ideal for sporting events or any fast action situation.
- A top shutter speed of 1/8000 sec freezes even the fastest action in well lit settings.
- Live View mode, now with contrast AF, Face Detection, and optional histogram, grid, and bright/dark area display, allows you to quickly compose your images without having your eye against the viewfinder.
- A 100 percent field-of-view viewfinder (92X magnification) and bright focusing

  screen are ideal for accurate image composition and accurate focus.
  - The PENTAX 11-point autofocus system features improved focus algorithms over previous generation K series DSLR cameras, providing faster, more responsive AF.
  - The PENTAX-original Shake Reduction system now compensates for rotational sensor movement
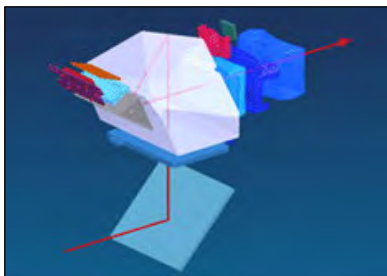
improving the sharpness of your images at the moment of capture.

- The **K-7**'s Dust Reduction system, improved over previous K series cameras, features a piezo-ceramic vibration action to the sensor's low-pass filter for dust-fee image capture.
- A new high capacity battery features extended battery life, ideal for travel photography or video work.
- Advanced image capture settings, digital filters, and HD Video aspect ratio provide outstanding flexibility and creativity while minimizing the need for computer image manipulation.
- Custom Image modes with advanced parameter settings including new Key adjustment allow users to customize the processing mode to suit personal creative style.

Other K series innovations featured on the Pentax *K-7* include:

- Multiple exposure settings, including Green, Program, Sv, Tv, Av, TAv, M, Bulb, X-sync, and USER modes, provide extensive creative control over the exposure for photographers of all experience levels.
- Advanced white balance settings include highly customizable white balance fine tuning, color temperature adjustment, and post image capture manual white balance selection for perfect pictures in even the most difficult lighting.
- Dynamic Range setting with adjustable shadow correction brings out hidden or lost details in both highlights and shadows for even the highest-contrast, dynamic lighting.
- Dedicated PC socket for studio flash offers convenience for the studio photographer without adding hot shoe adapters.
- Advanced capture options include multi-exposure and interval shooting for creative special effects and time-lapse photography.

Highlighting Some of the *K-7* General Features

If you evaluate a digital photograph by its composition, the **K-7** like is predecessor the *K20D,* has many features to help you capture the right moment. The **K-7** is a photographer's dream come true. The camera has many characteristics of the professional cameras and has some features found in no other camera, anywhere, at any price. It the best Pentax DSLR ever produced at the time of writing. This is not a point-and-shoot or an entry-level camera, although its price is much more reasonable than similarly equipped DSLR cameras. You can see that the mode dial is com-

prised of professional mode choices. Gone are the auto-picture icons, portrait mode, a landscape mode, moving object mode etc. What you have on the *K-7* are (▬) **(Green)** Fully automatic, **(P)** Hyper Program, **(Sv)** Pentax unique Sensitivity priority, **(Tv)** Shutter priority**, (Av)** Aperture priority, **(TAv)** Shutter/Aperture priority, **(M)** Hyper Manual mode, **(B)** Bulb mode, **(X)** Flash X-sync Speed, **(USER)** User preferred settings saved, **(Movie)** HD Video mode. As you can see, the camera is fully customizable to your preferences or shooting style.

So, before we get into the detailed operation of this wonderful camera, read about the following *K-7* features. It will give you a better understanding of the unconstrained capabilities and adaptability of the camera. If you are upgrading from the *K20D*, you will master the *K-7* quickly. If you are upgrading from one of the previous Pentax 6 – 10 megapixel DSLR models, there will be a bit of a learning curve.

Resolution

The new 23.4 x 15.6mm redesigned **CMOS** sensor records photos with a resolution of up to 14.6 megapixels. This is enough to produce astonishing 16" x 20" pictures and beyond, with quality only dreamed of in the 35mm film era. Most people only print that large once in a while; but it's nice to know that you can. The *K-7* has the best image quality at high ISO than previous DSLR models. If the highest resolution is more than what you need, the camera shooting mode can be adjusted to shoot at 14.6 MP, 10MP, 6MP, and 2MP. This would make the internal and external processing images much faster, but the quality would be diminished proportionally.
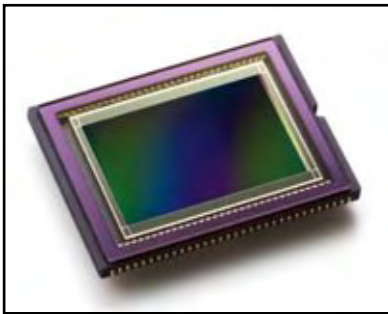
Why redesigning the CMOS sensor?

According to Pentax, in designing the *K-7* Digital SLR, it was decided to use the same CMOS sensor used on the *K20D* as a basis, but with significant design improvements. It was almost rebuilt from the ground up to minimize noise, adds four channel output for fast image capture, and the ability to capture HD quality movies. It is the ideal combination of resolution and file size, allowing vary large (poster size and larger) prints and cropping flexibility.

CMOS, (**C**omplementary **M**etal-**O**xide-**S**emi-conductors), are a major class of integrated circuits, and CMOS technology is used in a number of electronics including image sensors. With a CCD sensor, light is not amplified at the photo diode; rather, the charge is carried in sequence and converted to voltage. This creates more heat on the sensor, which can lead to increased noise.

Achieving the High-Resolution Sensor

Development of the high resolution CMOS sensor required decreasing the size of the peripheral circuitry to maintain photo diode size. The peripheral circuitry of the new sensor is a mere 0.13 micro-meters thick per pixel , which allows the photo diode space to be maximized to over 40 percent of the pixel (typically 30-35% of the pixel), this is the same size as photo diodes on other manufacturers' 12 megapixel sensors. The larger photo diode gathers more light in a shorter time and therefore can respond more sensitively. As a result, the *K-7* is able to achieve higher sensitivity levels (up to 6400 in the expanded ISO mode). In addition, there is a more direct light path to the pixels, allowing higher quality results from classic Pentax lenses.

Two important characteristics of CMOS devices are high noise immunity and low power consumption. Significant power is only drawn when the transistors in the CMOS device are switching between on and off states. Consequently, CMOS devices do not produce as much waste heat as other types of sensors (resulting in less noise) and give longer battery life. CMOS technology also allows a high density of circuitry at the pixel level allowing sensitivity adjustments on the sensor, rather than at the A/D (Analog to Digital) converter. The CMOS sensor converts the signal from the photo diode to voltage at the pixel level and the voltage is amplified at the photo site with built in components. Noise due to increased sensitivity is independent of other components such as flexible circuit boards and the main circuit board. Additionally, the low heat, low power consumption of the CMOS sensor allows the *K-7* to offer the live view function, ideal for critical composition of images, and improved battery life over previous models.

Did you get all of this technical stuff? You don't need to; it translates to better images with less noise.

Exclusive Image Processor

The redesigned **PRIME II** processor (**Pentax R**eal **IM**age **E**ngine) significantly speeds up the image processing when compared to other current DSLRs. The new PRIME II engine offers faster data-processing speed for higher quality images with richer gradation and more accurate color rendition. The system also offers high-speed movie data transmission. It allows you to shoot continuously at a higher rate, up to 5.2 images per second, which is very good considering the 14.6 MP file size of the CMOS sensor. In addition, it allows you to process RAW images in-camera without the need of a computer.

Proprietary Dust Removal System (DR II)

This (**DR II**) **D**ust **R**emoval **II** system ensures that dust on the CCD is a thing of the past, for the most part anyway. The *K-7* is equipped with a newly developed Dust Removal **(DR II)** mechanism to more effectively remove dust and minimize spots on recorded images even after changing lenses in dust-prone outdoor settings. Using a piezo-ceramic vibration action, the system shifts or vibrates the low-pass filter located in front of the CMOS image sensor at supersonic speed to remove dust more efficiently. A unique dust-alert system also allows users to check for dust adhering to the low-pass filter prior to actual shooting.

How does that help you? Post processing and retouching of images, with spots

caused by dust, may no longer be necessary. The *K-7* has introduced additional tools to further eliminate dust specks that have a tendency to stick in very humid conditions. With interchangeable lenses, dust will be introduced in the body, possibly each time you change lens. Pentax has introduced the Dust Alert function. This function, when activated, makes a copy of the sensor surface. It actually saves an image of it and displays the results on the LCD screen. Any dust on the sensor is shown in reverse with a replica of the front of the camera without the lens attached. So that by looking at the sensor from the lens side of the camera, you can physically clean the sensor, knowing where the dust particles are located.
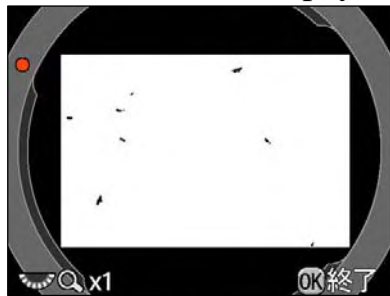
To help even more, the *K-7* has been given a Pixel mapping feature and any dead pixels found are fixed using interpolation with adjacent pixels. Brilliant!

Exceptional Shake Reduction System (SR II)

The *K-7* features the Pentax-developed SR (Shake Reduction) mechanism, which effectively compensates the adverse effect of camera shake by approximately 2.5 to 4 shutter stops, assuring sharp, blur-free images even under demanding shooting

conditions. This innovative mechanism is compatible with all Pentax lenses ever produced. This new-generation version allows complete shift freedom, including rotationally of the image-sensor regardless of the camera's inclination. The mechanism also provides ser-friendly new functions such as Automatic Level Adjustment and small Angle Adjustment (up/down, right/left and clockwise / counterclockwise) to help photographers compose images exactly to their specifications. * Lenses compatible with this mechanism are the Pentax K-, KA-, KAF-, KAF2- and KAF3-mount lenses; screw-mounted lenses (with an adapter); and 645- and 67-system lenses (with an adapter). Some functions may not be available with certain lenses.

Dust and Humidity Resistance

We can say farewell to the camera enemies; dust and humidity. First and most importantly, the Pentax *K-7* is built around a solid stainless steel chassis, surrounded by a lightweight magnesium-steel alloy body. The DSLR camera feels very professional and very solid. The addition of non-slip material at all strategic locations, makes holding the camera comfortable and safe. The camera has 77 seals protecting the internals from dust, humidity, rain and snow. This feature alone is not available anywhere on cameras in the *K-7*'s price range. This feature is usually found on professional cameras costing up to five times more. It makes me wonder what exactly defines a "Pro" camera! Is it a camera that costs thousands? Is it a camera that allows one to make money? In the glory days of film based cameras, professional cameras were the big and complicated cameras that required extensive training to operate. Today, digital technology has certainly reduced the gap between consumers and professional photographers. The *K-7* is definitely not your father's camera.

File Formats

Most DSLR now have the capability of saving the digital photos data in JPEG files, RAW files and RAW + JPEG. Saving in JPEG is quick and the final photo is generally of excellent quality. Many photographers, including myself, prefer shooting in RAW mode and adjust the photo's white balance, color, saturation, hue, sharpness, and contrast. Superior results can be achieved that way, but it is time consuming. Why not save in RAW and JPEG and decide later which photo you want to manipulate further? It is difficult to modify JPEG files extensively, especially in the shadow areas. RAW files give a much broader range of manipulation.

With the *K-7,* it is possible to shoot in RAW or RAW + JPEG on demand, without going through extensive menus. The camera has a dedicated RAW button, located on the side of the lens mount; this unique dedicated RAW button can be configured to switch in and out of RAW only, RAW+JPEG or JPEG modes for a single shot or continuously. How sweet is that? M*ore details found on page 73 and 138-140.*

Every company has its own proprietary RAW file format. This makes it difficult for us, the photographers, as the RAW files can only be manipulated with the respective manufacturer's software. Pentax has its own RAW file format (PEF) but allows you the choice of an additional RAW file format. The camera can be set to save the RAW files in DNG format. This format was introduced by Adobe® as a universal RAW file format. DNG stands for **D**igital **N**e**G**ative. Using this format, you can save your digital photos directly into Photoshop®, Lightroom® and Elements®, making your workflow so much easier.

Pentax did not stop there; they designed the *K-7* with In-camera RAW development possibility. That's right, the *K-7* allows you to develop images shot as RAW file to a JPEG file with a wide range of selectable adjustments such as resolution, compression, white balance, sensitivity, color intensity, saturation, sharpness, contrast and more, all without using a computer. You can see the development of your image right on the large 3 inch LCD monitor. A good 24 inch monitor is still a better choice, but in the field, this feature opens many new possibilities. The *K-7* can also save your images in TIFF format, which is a lossless format. TIFF files can be modified and re-saved without loss of image quality.

Pentaprism Viewfinder

The trade name Pentax is derived from the words "**Penta**prism" and "Refle**x**." In 1957, the Asahi Pentax model stunned the world with its incredible design advances. It was the first time a pentaprism had been utilized in the viewfinder of a Pentax single lens reflex (SLR) camera, thus introducing the concept of eye-level viewing. It was the first camera to be marketed under the name Pentax. It was enthusiastically received with praise for its upright and laterally correct viewfinder image. Pentax viewfinders have always been superior to other 'cropped sensor' DSLRs and the *K-7* is no different. It utilizes a glass pentaprism and renders a 0.95x magnification with a 100% field of view.

The viewfinder also allows viewing of all the important image information such as: focus point indication in red, in-focus indicator, focus mode status, shutter speed, aperture, exposure compensation, number of image remaining, shake reduction status and the current ISO setting.
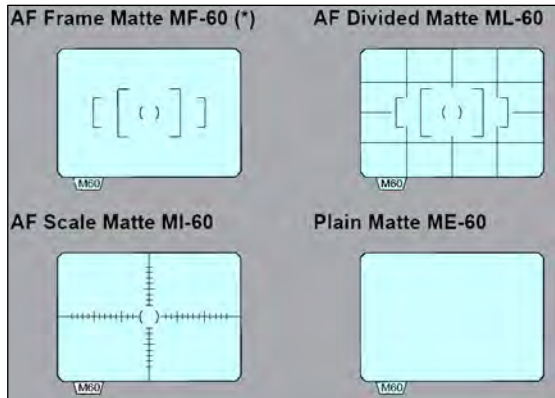
In addition, the standard focusing screen is interchangeable. Pentax offers three optional focusing screens. An optional AF divided matte screen combines the focus area brackets with a grid to help composition. Another optional AF scale matte screen provides a scale to verify subject placement and a third matte only. Other companies now offer focusing screens that fit on Pentax DSLR cameras. I have read good reviews about focusing screens manufactured by Katz Eye™.

http://www.katzeyeoptics.com

The standard eyecup is removable and the supplied eyepiece cover can be attached to stop stray light from entering the chamber during long exposures. A viewfinder loupe model 0-ME53 is available as an option. With this viewfinder loupe attached, the finest details are easily visible. The 1.2x magnification helps if you wear glasses. The 0-ME53 is bigger than the standard eyecup and consequently, you will not smear the LCD with your nose.

A Diopter adjustment slider is located above the viewfinder and allows adjustment from $-2.5m^{-1}$ to $+1.5m^{-1}$.

Focusing System

The **K-7**'s new **SAFOX VIII** Plus wide-frame autofocus system features 11 sensor points (with nine cross-type sensors positioned in the middle). By adding the light source type to its data range, and driven by a greatly improved algorithm, Pentax improved the AF system assuring reliable, responsive autofocus operation superior in speed and accuracy to the previous system. The **K-7** also incorporates an AF-assist spotbeam projector to improve auto focusing accuracy in the dark.

There are two autofocus modes and one manual mode so you have total control of the camera focusing abilities.

Indeed, the *K-7* offers a choice of two autofocus modes; **AutoFocus Single** (**AF-S**) and **AutoFocus Continuous** (**AF-C**), which maintains focus of a moving subject as long as the shutter release button is pressed halfway or the dedicated AF button is activated. The camera autofocus system can be activated by pressing the shutter release halfway. (It can be set on or off) It can also be activated by pressing the AF button located on the back of the camera about where your thumb is positioned when holding the camera.

The **Manual Focus** (**MF**) mode gives you complete control over focusing. The *K-7* has 100% backward compatibility with all of the 24 million plus lenses ever manufactured by Pentax. Using a non-autofocus lens is permitted, and, by pressing the shutter release button halfway while manually focusing, the focus indicator will appear and a beep (optional) will be heard to confirm that focus is achieved. With manual lenses, only center focus is available. *More on focusing page 96.*

The *K-7* permits the adjustment of the AF focusing position for all lenses used or for selected lenses (up to 20 lenses). This new adjustment is available in the Custom Setting menu, and you can always reset the adjustment to the factory defaults.

Metering System
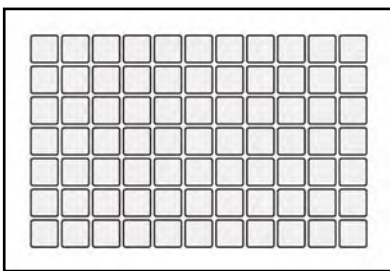
A new 77-segment multi-pattern metering system was developed for the *K-7*. It greatly improves light-metering accuracy. By accurately analyzing various types of data (such as the image's composition and format between upright and horizontal, and the subject's distance and magnification) transmitted from the sensors in the camera body, this system greatly improves the accuracy of exposure control.

(1) The **Multi-segment metering:** Accurately assesses the balance between the bright and dark areas within the segments automatically.

(2) The **Center-weighted metering:** Measures the entire screen with an emphasis on the center and determines the proper exposure.

(3) The **Spot metering:** Analyzes the center of the screen and determines the proper exposure.

The meter operating time is adjustable from 3 seconds, 10 seconds or 30 seconds.

The **A**uto**F**ocus (**AF**) point and the **A**uto **E**xposure (**AE**) point can be linked during multi-segment metering. *More on metering page 86.*

Exposure Modes

The **K-7** has 10 exposure modes and one **User** definable mode. The camera really stands out with all of its available exposure modes. Basically, three major components are the ingredients needed for a well exposed picture; the aperture, the shutter speed and the media sensitivity. In the 35mm format era, the film was the media and the film ISO was the sensitivity. It was difficult to change film before the entire roll was exposed and the ISO was locked-in for the duration. It was impractical. With the advent of digital cameras, the media is a CCD or CMOS and the ISO is adjustable at will. Pentax went one step further and developed a new exposure mode: **S**en-siti**v**ity Priority. (**Sv**) At this time, I believe it is the only camera with this feature. There is also a new SD **Movie** mode. The exposure modes are explained in detail in Chapter 2.

The following list highlights each mode and gives a brief description of what it does.

Green Mode: ▬

Automatically sets shutter speed and aperture to the proper exposure according to the **Program Line** when taking pictures**.** * *see page 65.*

Theoretically, you could start shooting in this mode right away. All the factory defaults are set to work in this mode when you receive the camera. However, you will want to customize the camera to your preferences. *More on Green Mode page 65.*

(P) Hyper-Program Mode:

Automatically sets shutter speed and aperture to the proper exposure according to the **Program Line *** when taking pictures. While maintaining proper exposure, it allows the use of the front e-dial and rear e-dial to change the shutter speed or aperture. Pressing the ISO setting button and the ISO setting can changed with the rear e-dial. This could be the only mode available and it would still make this camera outstanding. *More on Hyper Program page 117.*

(Sv) Sensitivity Priority Mode:

Automatically sets shutter speed and aperture to the proper exposure according to the set sensitivity. What a concept. Pentax is the first to use such mode. Sv stands for Sensitivity values. *More on Sensitivity Mode page 119.*

(Tv) Shutter Priority Mode:

This lets the user set the shutter speed. This is useful for freezing action, or shots expressing movement. Tv stands for Time values, not Television☺.

More on Shutter Priority page124.

(Av) Aperture Priority Mode:

This lets the user set the Aperture. This is useful for selective focusing. It affects blurring or sharpening of the background. Large aperture renders a blurry background and small aperture enlarges the depth of field. Av stands for Aperture values.

More on Aperture Priority page120.

(TAv) Shutter & Aperture Priority Mode:

Automatically sets the sensitivity (ISO) so that the shutter speed and aperture give the proper exposure according to the brightness of the subject. TAv stands for Time and Aperture values.

More on TAv Mode page120.

(M) Hyper Manual Mode:

This lets the user set the shutter speed and the aperture to capture the picture with creative intent. You're the boss here and can override the camera to your liking.

M stands for manual mode. *More on Manual Mode page 121.*

(B) Bulb Mode:

Lets you take pictures at long exposure such as night photography. You will likely need a sturdy tripod and the optional cable switch model CS-205 to control the long exposure without camera shake.

More on Bulb Mode page 122.

(X) Flash X-Sync Speed Mode:

Locks the shutter speed to 1/180 sec. Use this mode when using an external flash that does not automatically change the shutter speed.

More on X Mode page 122.

(USER) Mode:

If the preceding exposure modes are not enough, the *K-7* allows the user to customize the exposure by choosing the following features and retrieve them simply by setting the mode dial to **USER**. The following settings can be stored; Exposure mode, Flash mode, EV compensation, Exposure Bracketing Steps and number of frames, Drive mode, Flash Exposure compensation, Extended Bracketing steps & type, Sensitivity, Auto Sensitivity adjustment range, White balance, File format, JPEG recorded pixels, JPEG quality, Image tone, Saturation, Sharpness and Contrast. *More on User Mode page 123.*

(Movie) Mode:

Pentax introduces a brand new mode with the *K-7*. The new Movie mode allows the recording of High Definition video. This new kind of hybrid DSLRs opens up a completely new way to look at photography. The *K-7* does not only produce spectacular still images, it can document events or even record the making of your still pictures. You can even convert images from the video clips to still pictures, at a lower resolution. *More on Movie Mode page 210.*

* **Program Line**: Regulates exposure according to preset program line.

Settings		Characteristics
AUTO	AUTO	Camera determines the appropriate settings.
Normal	Normal	Basic Program Automatic Exposure. (default setting)
	Hi-speed Priority	Program Automatic Exposure that prioritizes high shutter speeds.
	DOF Priority (deep)	Program Automatic Exposure that closes the aperture as much as possible for a deep depth of field.
	DOF Priority (shallow)	Program Automatic Exposure that opens the aperture as much as possible for a shallow depth of field.
MTF	MTF Priority	Program Automatic Exposure that prioritizes the best aperture settings for the attached lens when a DA, DA L, D FA, FA J or FA lens is used.

Chapter 2

How to use your K-7

Addendum

Addendum

Modern DSLR cameras are…micro-chips and optical elements

In this book, I've tried to explain in a down-to-earth way, the tools the *K-7* puts at your disposition. The *K-7* is a great advance amateur camera and can be a Professional camera depending on what your needs are. Amateurs photographers to Professional photographers alike can take great pictures regardless of camera prices and qualifications. It is and always was the photographer, not the camera. The camera is the tool and photography is the knowledge of capturing pictures and the understanding of the craft.

The *K-7* has some great attributes usually found on Professional cameras. It has some functions found nowhere else, at any price. I believe that once you learn to use the *K-7* to its full potential, it will be all the camera you'll need.

Camera models will continue to evolve and cost less. They are more and more a form of electronic device with computer-like capabilities and less and less of an optical instrument. Because of that, the cost will continue to drop. However, it really would be a good idea to acquire lenses and make your own "Lens Roadmap" to meet your aspirations. Lenses are mostly optical devices, although some electronic are now incorporated to exchange data with the camera bodies, shake or vibration reduction, and the auto focus system. Because lenses will continue to be mostly optical devices, the prices will continue to climb. If well taken care of, a lens should last a lifetime. Whatever system you currently own, I bet you have more money invested in lenses and accessories than in camera bodies.

Other *K-7* functions not fully explained in Chapter 2 "How to use your *K-7*"

Why would I leave the explanation of some features and functions out of Chapter 2? If you read the book this far, you've learned a thing or two. You now know your way around the camera and the following features and functions should be a piece of cake for you to discover. Read what I left out starting on the next page:

You can always email me with questions or leave a comment on my blog site. info@k10dbook.com or http://pentaxdslrs.blogspot.com/ It's always a pleasure to help another Pentax friend.

HDR (High Dynamic Range)

The Pentax **K-7** is the only current DSLR that has an HDR function. The picture at left below was taken without HDR. The right picture was taken with HDR strong. The first picture show some washed-out area and dark shadow. The second picture shows a more uniform distribution of the dynamic range. The HDR function is found in the **Rec**. menu page 2. It is only available with JPEG files.

Electronic Level Function

The **K-7** can display a level meter in the viewfinder, on the LCD panel and on the LCD monitor when shooting in Live View. It helps in making that the horizon is leveled. That should replace the bubble levels found on tripods. This feature is found in the **Rec**. menu page 3. Furthermore, in the same menu, just below the Electronic Level, check marking the Horizon Correction will automatically correct horizontal errors by up to 1°. It doesn't seem much, but you will be surprised how often the horizon line is a tad out.

Programmable Embedded Copyright

Another great idea from Pentax. You can embed copyright in the Exif data of all your images. Nobody can change that information and this will protect your images from being hijacked and used by someone else without your permission or payment. This function is found in the Set-up menu page 3. You can put the Photographer's name and the copyright holder.

Addendum

Composition Adjustment in Live View

When shooting with a tripod, sometimes you have to readjust the position of the camera slightly to achieve the intended composition. This used to mean that you had to reposition the tripod and camera. With this composition adjustment feature, when shooting in Live View, you can adjust the position of the sensor on the X-Y direction as well as the rotational axis. You will find this great utility in the **Rec**. menu page 2 at the bottom, Composition Adjust.
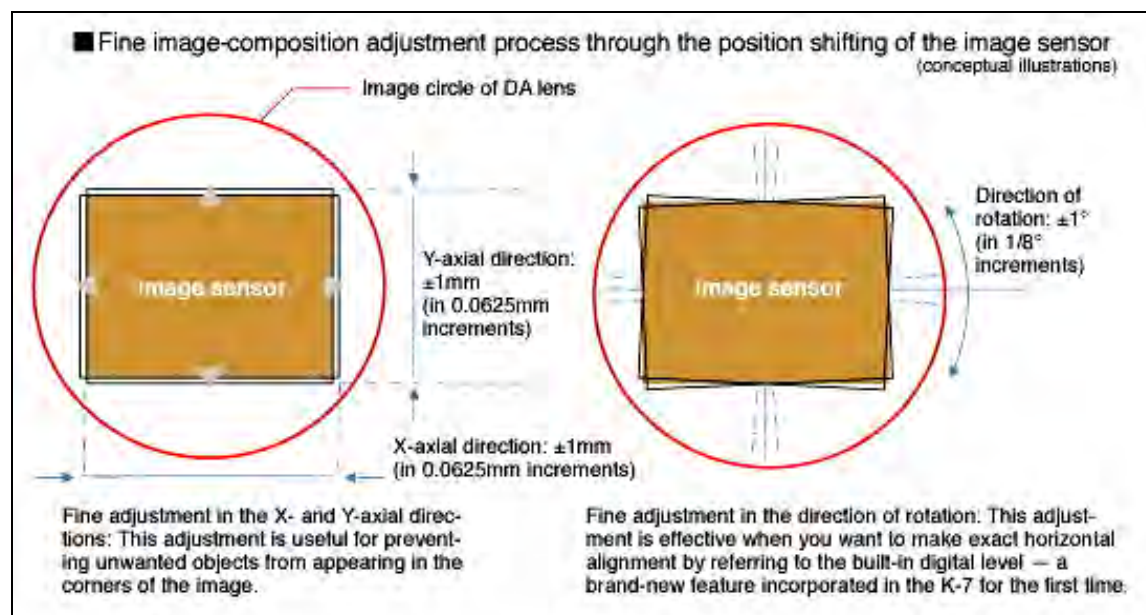
Electronic Distortion Adjustment

Almost every lens on the market creates some distortion to a point. You can rectify this in Photoshop and most post processing software. With the K-7, you can have the camera adjusting that automatically. I doesn't work with old lenses, but does work with the newer DA, DA* , DA L and D FA lenses. It corrects lens barrel and pincushing distortion. Look at the Rec. menu page 1, at the bottom, Lens Correction.

Lateral Chromatic Aberrations Adjustment

Found in the same menu as the distortion adjustment above, this will correct lateral chromatic aberration.

New shutter speed up to 1/8000 sec

Pentax designed a new shutter mechanism for the **K-7**. The shutter blades are lighter in weight, the magnetic attraction to generate more driving force from the motor has been optimized, and the unit is built with abrasion resistance. That translate to a shutter mechanism that can withstand more than 100,000 shutter releases and allows shutter speed of up to 1/8000 sec. That is fast by any standard.

Autofocus adjustment chart

Autofocus Adjustment for the Pentax **K-7**, Custom Setting No 37, and how to check the Auto-focus accuracy

Autofocus Accuracy, Back & Front Focusing Problems

I personally never had any auto-focusing problem with any lens or camera I ever owned. It seems that these days, members of every blog and forum sites are talking about checking and adjusting the auto-focus on their lenses or DSLR. I think there is a perception that many lenses or DSLR cameras are having front or rear focus problems. In reality, I am inclined to think that novice photographers, "Pixels Peepers", and inquisitive hobbyists, influenced by the available internet information, are finding problems where there is none. If a particular lens consistently gives out-of-focus results, when all other lenses used with the same DSLR are okay, you might have a focusing problem with that particular lens. If most of the pictures taken with the same DSLR, but with various lenses, are out-of-focus, you might have a DSLR camera-focusing problem.

If you think there is a focusing problem, several auto-focus testing charts are available from forums, blogsites and websites. I probably downloaded most of them and found inaccuracies with all of them. They are either too small, or too cluttered, or have measurements that are not to scale, etc. My own chart, published on my blog

site earlier on, was too small and too cluttered for lenses with a minimum focusing distance of more than six to eight inches. One thing charts seem to have in common is that no one is ever sure of which exact point of the chart the camera is actually focusing on.

Back or front focusing problems are more notorious with subjects that are within a short depth of field, such as macro pictures or selective focusing pictures, and with the lens used at its widest aperture. The three images below illustrate this. The middle picture is the way it should be as the cat's eye was the focusing target. The picture on the left shows a front- focusing problem, and the picture to the right shows a back-focusing problem.

This shows signs of front focus problem — The focus is on the eye to your right — This shows signs of back focus problem

That alone would not mean that the lens or camera has a focusing problem, it could be the photographer's error. However, similar results time after time could be the first hint that you might have a focusing problem. Perhaps a logical next step would be to test the lens in question under a controlled environment. A controlled environment could be the inside of a building where there is no wind, with the camera set on a tripod, and with good lighting. An auto-focus testing chart could be used, preferably one approved by the manufacturer if they have one available.

Of all of the DSLR cameras manufactured by Pentax, only the *K20D* and the *K-7* have the option of adjusting the front / back focusing from within the camera (Custom Menu No.35on the *K20D* and No. 37 on the *K-7*). All auto-focus adjustments on other Pentax models should be made by a Pentax trained technician. Several forums members have published articles, explaining procedures to modify

DSLR Firmware. Doing so could void the warranty and damage the camera. It is better to leave specialized work to specialists.

Proposed Solution

I do not believe that Pentax has an AF checking chart available to the public. That is the primary reason I took it upon myself to design one. After reading every blog and information about the subject on the internet, after reading comments from the readers of my blog site and threads on various forums, I deducted that one chart could not do it all. Three charts were designed because the minimum focusing distance varies from lens to lens. The smaller chart (Chart–1) works well for close-up lenses and lenses that have macro capabilities. The medium sized chart, (Chart-2) works well for normal lenses, say 30mm to 100mm, which have a minimum focus distance needing a target a little bigger than Chart-1. The third chart (Chart-3) is for lenses that cannot focus very close. One could keep enlarging the last chart, but I believe that the three charts attached herein will be functional for the majority of lenses.
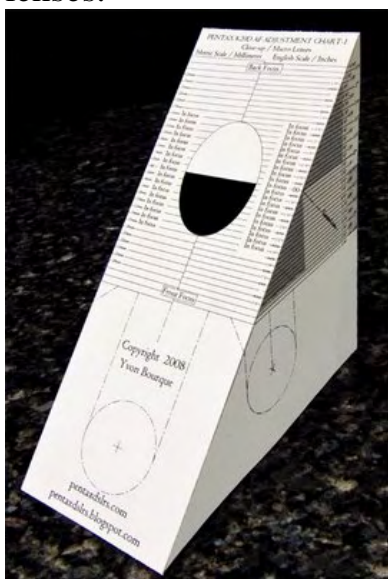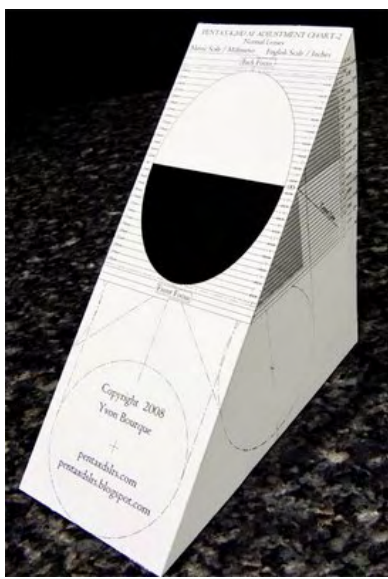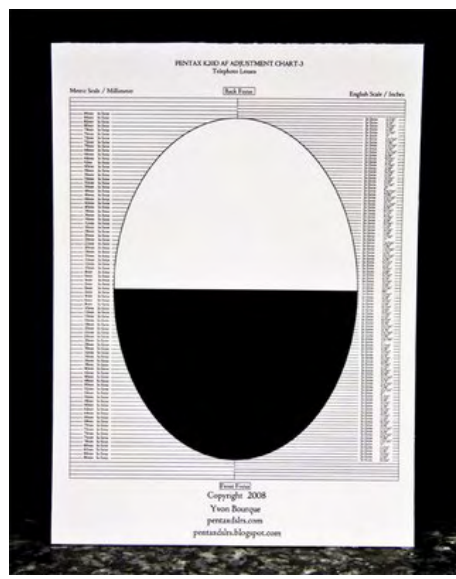
Chart No. 1   Chart No.2   Chart No.3

Addendum

There are various opinions whether a chart should be viewed at 45° from the lens centerline axis, or at 30°, or any angle or even flat. The reality is that it should give good results at any angle between 30° and 60°. Chart-1 and Chart-2 were design for viewing at 45° from the lens' centerline axis. The measurements on the viewing surface were corrected for accurate reading when viewed at a 45° angle. The Charts could have been designed for viewing at 30°, giving more viewable depth of field for both front and back. However, I opted for the 45° because the charts could fit on a 8 ½" x 11" sheet of paper (Letter size).

I chose a focusing area shaped as a circle. The bottom half is black and the top half is white. When viewed perpendicularly or flat, it has an oval shape, because the chart is meant to be viewed at 45°. When viewed at 45°, the focusing area appears as a perfect circle. That also helps verifying that the lens is at a 45° angle..

Chart No. 2 viewed perpendicularly or flat.
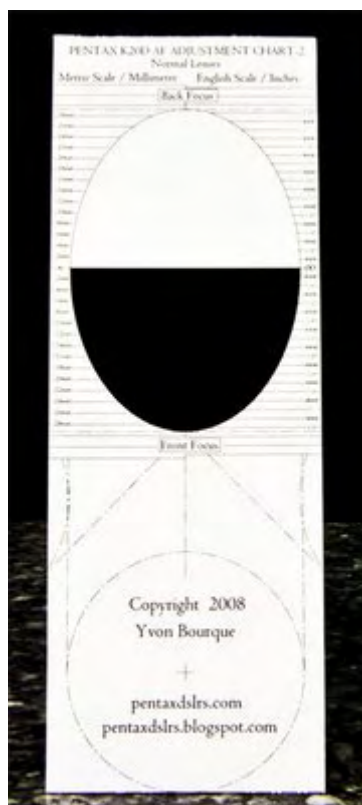
Chart No. 2 viewed at 45 degree angle
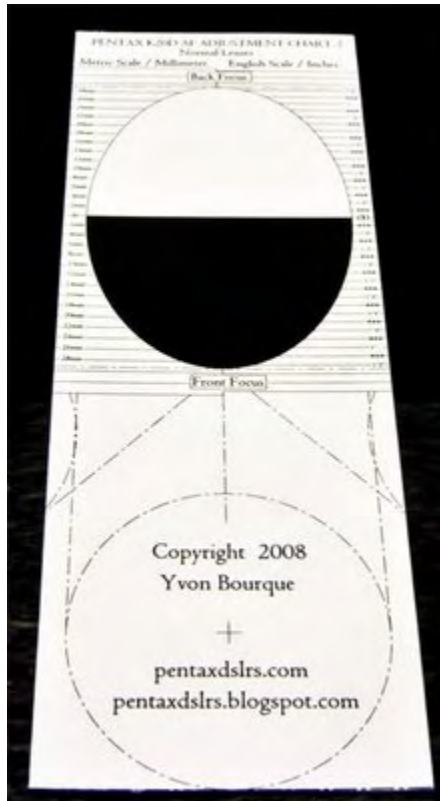
Camera Settings

Set the camera to:
* Autofocus single.
* Leave the Shake Reduction off if you use a tripod (recommended).
* Use the Aperture Priority mode (Av).
* Set the lens aperture to its maximum.
* Set the AF point to center.
* Use a remote for the shutter release or use the 2-second timer to avoid any movement.

Addendum

The two smaller charts were designed so that they can be cut and taped together in a way that they can stand at a 45° angle when placed on a table, desk, or flat surface. The camera / lens is then leveled and preferably positioned on a tripod so that the lens' centerline is aligned with the center of the chart. Place the lens as close as you can to the center of the chart target while it can still focus on the intersection of the black / white section, then back it off just a little. Position the large chart flat (horizontally) and the camera / lens angled at 45° from the chart.

After choosing the chart that will work best with your lens, and once the chart and camera / lens are position correctly, start by trying to focus on the white area of the chart. The lens should not be able to focus correctly and it should be "hunting". If it achieves focus while pointing to the middle of the white area, it means you could actually be in focus with the lines surrounding the white area and you need to use the next larger chart.

Next, move the camera / lens angle slowly downward until it auto focuses. At that point, you know that you are focused on the intersection of the black / white portion of the chart. That is the center of the chart. The measurements (Metric on the left and English on the right) are at zero on both sides of the chart horizontal centerline. Take the picture and look at the results. The center target line (00) should be perfectly clear while the top and bottom target lines and text should get increasingly and proportionally out of focus. The top target lines represent the back focus area
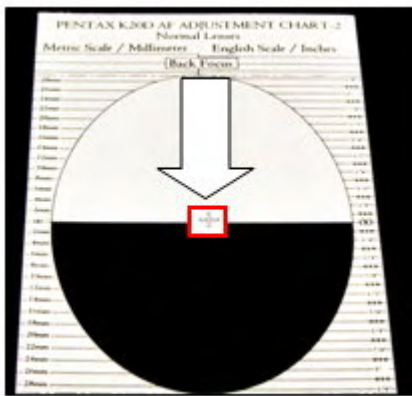
while the bottom target lines represent the front focus area. Repeat this test several times to make sure you have done the test correctly. If the center target line is in focus, but the front and back target lines are not proportionally getting out of focus, there shouldn't be any serious problems with the lens. Remember that this test is done with the lens opened at the maximum aperture and that the depth of field will increase with smaller aperture. Most of the lenses have a "sweet spot which is usually 1 to 2 stop smaller than the maximum aperture. Therefore, you should only be concerned if the center target line is not in perfect focus while either the back or front lines are.

Understand The Results
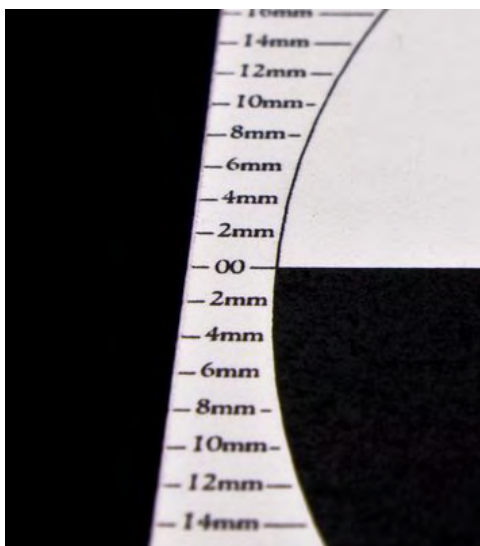
The perfect lens should return a result similar to the image to the left:

A lens with acceptable Auto Focus should have the center target line in focus, even if the back and front focus lines are not equally or proportionally out of focus.
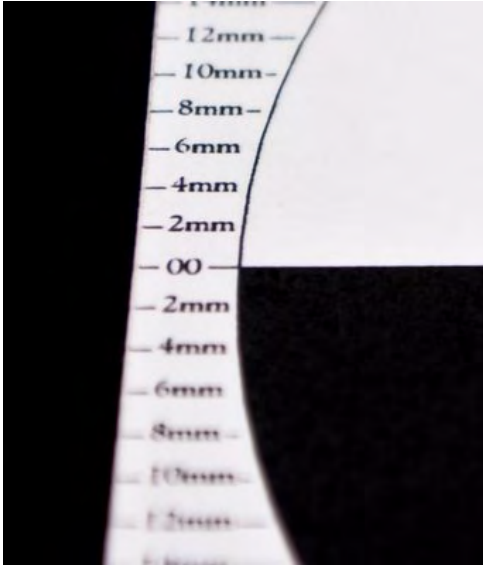
A lens with back focus problems will look like the image to the left below while a lens with front focus problems will look like the image to the right below.
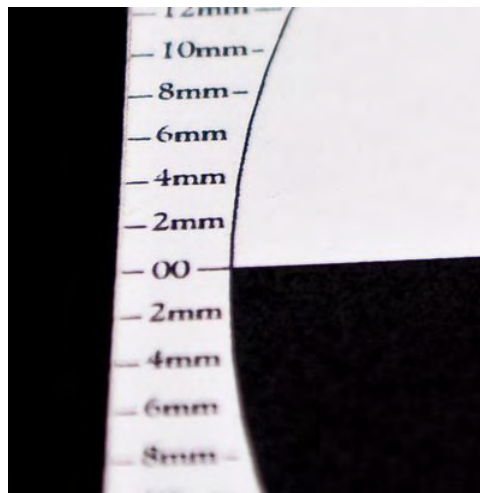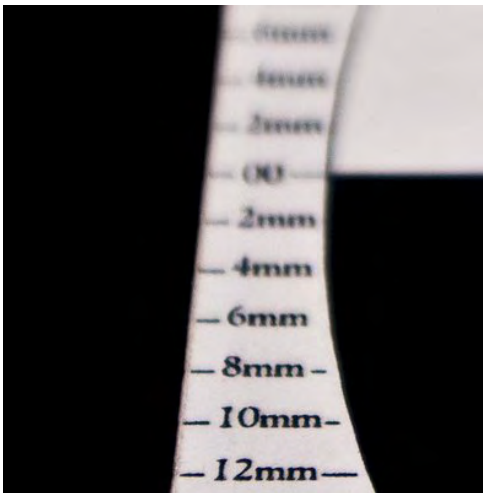
A Word About Auto Focus Sensors
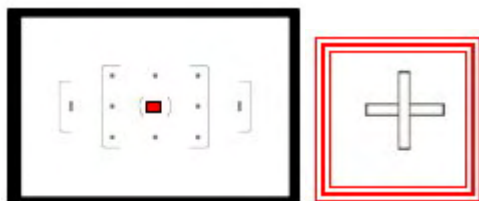
Sensors are either vertical, horizontal or cross type. Pentax *K10D*, *K20D* and *K-7* all have 9 cross type sensors and two vertical sensors. Vertical sensors detect the sharpest horizontal contrast within its area of coverage and lock the focus on that point. Alternatively, the horizontal sensors detect the sharpest vertical contrast within its area of coverage and lock the focus on that point. You guessed it; the cross type sensors detect the highest vertical or horizontal contrast and lock the focus on that point. Since we use the center focus point of our camera, which is a cross type sensor, our chart was deliberately designed without any vertical lines in the center so that the focus can only lock at the intersection of the black and white portion of our target. Note that in your viewfinder, the little red square indicates the focus area but the cross sensor is not necessarily dead center. It merely shows you the area of the sensor, but is not an exact focus point as the sensor will lock on the point of maximum contrast.

Difference Between 45° And 30° Charts
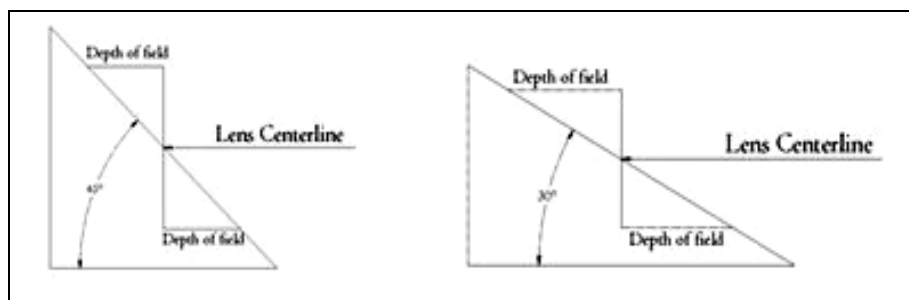
The above charts, one at 45° and one at 30°, illustrates why the depth of field is proportional to the angle of the chart.

The *K20d* Custom Setting Number 35 Is Shown Below– The *K-7* Setting Number Is 37 But It Is Almost Identical.

In the Custom Setting menu, navigate with the four-way controller to AF Adjustment, Setting number 35 or 37. Use ▲▼ to turn the AF Adjustment On or Off. When choosing On, press ► and select if you want to adjust the lens attached or all the lenses. Choosing all lenses would indicate that the camera needs AF Adjustment as choosing the current lens would adjust the AF for that lens when attached to the camera. The camera can retain settings for up to 20 lenses. Using the rear rotary dial, you can adjust the values from minus 1 to minus 10 and plus 1 to plus 10. You can reset the camera to the factory defaults anytime by navigating down ▼ to Reset and confirm Reset.
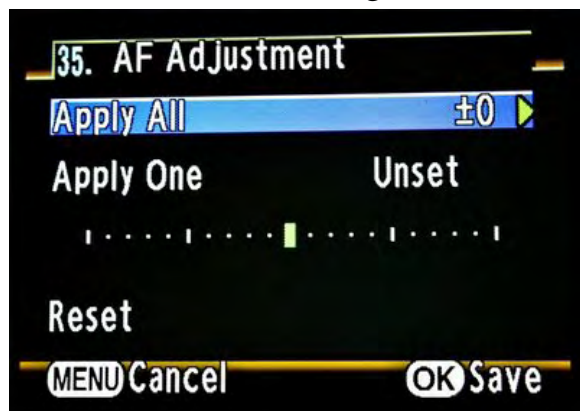
Disclaimer

Although the Charts have given me good results, you should fully understand how they help analyzing the Auto Focus accuracy. Read the above paragraphs several times until you completely grasp the procedures. You can adjust the focus of all Pentax lenses within the *K20D* and the *K-7*, as they are non-permanent changes. You can reset the Auto Focus to factory defaults at any time. As for the other Pentax camera models, you should only have a Pentax trained technician adjust the Auto Focus of your lenses or DSLR cameras.

Download the charts here: AF CHARTS

Print the charts on your own printer for the best quality possible. It is best to print on heavy mat paper.

PENTAX K20D AF ADJUSTMENT CHART-2

Normal Lenses

Metric Scale / Millimeter   English Scale / Inches

Center Line

Front Focus

Back Focus

Center Line

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pentaxdslrs.com
pentaxdslrs.blogspot.com

30mm
20mm
14mm
10mm
6mm
2mm
0mm
2mm
6mm
10mm
14mm
20mm
30mm

28mm
26mm
24mm
22mm
20mm
18mm
16mm
14mm
12mm
10mm
8mm
6mm
4mm
2mm
00
2mm
4mm
6mm
8mm
10mm
12mm
14mm
16mm
18mm
20mm
22mm
24mm
26mm
28mm

1/8"
15/16"
3/4"
7/8"
3/4"
5/8"
1/2"
3/8"
1/4"
1/8"
00
1/8"
1/4"
3/8"
1/2"
5/8"
3/4"
7/8"
1"
1/8"
1/16" 1/4"
3/16" 1/8"
15/16" 7/8"
13/16"
11/16" 5/8"
9/16"
7/16" 3/8"
5/16"
1/16" 1/8"
1/16" 1/4"
3/16" 1/8"
5/16" 3/8" 1/4"
7/16"
9/16" 5/8" 1/2"
13/16" 7/8" 3/4"
15/16"
3/16" 1/8" 1"
5/16" 1/4"

5/16" 1/4"
3/16" 1/8"
1/16"
15/16" 7/8" 1"
13/16" 3/4"
11/16" 5/8"
9/16" 1/2"
7/16" 3/8"
5/16" 1/4"
1/16" 1/8"
0"

PENTAX K20D AF ADJUSTMENT CHART-I

Close-up / Macro Lenses
Metric Scale / Millimeter
English Scale / Inches

Center Line

Front Focus

Back Focus

Center Line

Scale (Metric top, right side): 30mm, 20mm, 14mm, 10mm, 6mm, 2mm, 0mm, 2mm, 6mm, 10mm, 14mm, 20mm, 30mm

In focus scale (left column): 28mm, 26mm, 24mm, 22mm, 20mm, 18mm, 16mm, 14mm, 12mm, 10mm, 8mm, 6mm, 4mm, 2mm, 00— In focus, 2mm, 4mm, 6mm, 8mm, 10mm, 12mm, 14mm, 16mm, 18mm, 20mm, 22mm, 24mm, 26mm, 28mm — In focus

In focus scale (bottom column): 1/8", 1", 7/8", 3/4", 5/8", 1/2", 3/8", 1/4", 1/8", 00 — In focus, 1/8", 1/4", 3/8", 1/2", 5/8", 3/4", 7/8", 1" — In focus

English scale (bottom right): 5/16" 1/4", 3/16" 1/8", 1/16" 1/8", 15/16" 7/8", 13/16" 3/4", 11/16" 5/8", 9/16" 1/2", 7/16" 3/8", 5/16" 1/4", 3/16" 1/8", 1/16"—1/8", 0", 1/16"—1/8", 3/16" 1/8", 5/16" 3/8", 7/16" 1/4", 9/16" 1/2", 11/16" 5/8", 13/16" 7/8", 15/16" 1", 3/16" 1/8", 5/16" 1/4"

PENTAX K20D AF ADJUSTMENT CHART-3
Telephoto Lenses

Metric Scale / Millimeter   Back Focus   English Scale / Inches

Metric		English	
86mm	In focus	In focus	5/16"
84mm	In focus	In focus	1/4"
82mm	In focus	In focus	3/16"
80mm	In focus	In focus	1/8"
78mm	In focus	In focus	1/16"
76mm	In focus	In focus	3"
74mm	In focus	In focus	15/16"
72mm	In focus	In focus	7/8"
70mm	In focus	In focus	13/16"
68mm	In focus	In focus	3/4"
66mm	In focus	In focus	11/16"
64mm	In focus	In focus	5/8"
62nn	In focus	In focus	9/16"
60mm	In focus	In focus	1/2"
58mm	In focus	In focus	7/16"
56mm	In focus	In focus	3/8"
54mm	In focus	In focus	5/16"
52mm	In focus	In focus	1/4"
50mm	In focus	In focus	3/16"
48mm	In focus	In focus	1/8"
46mm	In focus	In focus	1/16"
44mm	In focus	In focus	2"
42mm	In focus	In focus	15/16"
40mm	In focus	In focus	7/8"
38mm	In focus	In focus	13/16"
36mm	In focus	In focus	3/4"
34mm	In focus	In focus	11/16"
32mm	In focus	In focus	5/8"
30mm	In focus	In focus	9/16"
28mm	In focus	In focus	1/2"
26mm	In focus	In focus	7/16"
24mm	In focus	In focus	3/8"
22mm	In focus	In focus	5/16"
20mm	In focus	In focus	1/4"
18mm	In focus	In focus	3/16"
16mm	In focus	In focus	1/8"
14mm	In focus	In focus	1/16"
12mm	In focus	In focus	1"
10mm	In focus	In focus	15/16"
8mm	In focus	In focus	7/8"
6mm	In focus	In focus	13/16"
4mm	In focus	In focus	3/4"
2mm	In focus	In focus	11/16"
		In focus	5/8"
		In focus	9/16"
		In focus	1/2"
		In focus	7/16"
		In focus	3/8"
		In focus	5/16"
		In focus	1/4"
		In focus	3/16"
		In focus	1/8"
		In focus	1/16"
0mm	In focus	In focus	00"
2mm	In focus	In focus	1/16"
4mm	In focus	In focus	1/8"
6mm	In focus	In focus	3/16"
8mm	In focus	In focus	1/4"
10mm	In focus	In focus	5/16"
12mm	In focus	In focus	3/8"
14mm	In focus	In focus	7/16"
16mm	In focus	In focus	1/2"
18mm	In focus	In focus	9/16"
20mm	In focus	In focus	5/8"
22mm	In focus	In focus	11/16"
24mm	In focus	In focus	3/4"
26mm	In focus	In focus	13/16"
28mm	In focus	In focus	7/8"
30mm	In focus	In focus	15/16"
32mm	In focus	In focus	1"
34mm	In focus	In focus	1/16"
36mm	In focus	In focus	1/8"
38mm	In focus	In focus	3/16"
40mm	In focus	In focus	1/4"
42mm	In focus	In focus	5/16"
46mm	In focus	In focus	3/8"
48mm	In focus	In focus	7/16"
50mm	In focus	In focus	1/2"
52mm	In focus	In focus	9/16"
54mm	In focus	In focus	5/8"
56mm	In focus	In focus	11/16"
58mm	In focus	In focus	3/4"
60mm	In focus	In focus	13/16"
62mm	In focus	In focus	7/8"
64mm	In focus	In focus	15/16"
66mm	In focus	In focus	2"
68mm	In focus	In focus	1/16"
70mm	In focus	In focus	1/8"
72mm	In focus	In focus	3/16"
74mm	In focus	In focus	1/4"
76mm	In focus	In focus	5/16"
78mm	In focus	In focus	3/8"
80mm	In focus	In focus	7/16"
82mm	In focus	In focus	1/2"
84mm	In focus	In focus	9/16"
86mm	In focus	In focus	5/8"
		In focus	11/16"
		In focus	3/4"
		In focus	13/16"
		In focus	7/8"
		In focus	15/16"
		In focus	3"
		In focus	1/16"
		In focus	1/8"
		In focus	3/16"
		In focus	1/4"
		In focus	5/16"

Front Focus
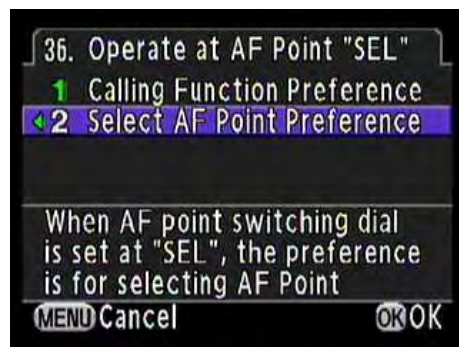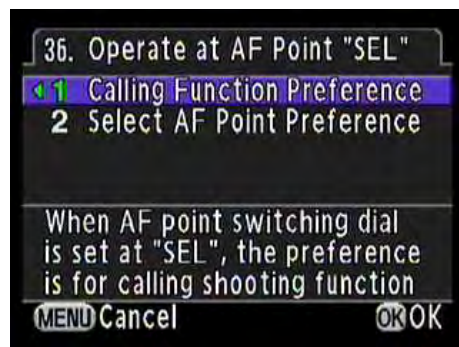
[How to operate additional function]

[36. Operate at AF Point "SEL"] is newly added on [Custom] menu.

*Select [36. Operate at AF Point "SEL"] and press four-way controller right then select either

[1 Calling Function Preference] or [2 Select AF Point Preference]. Press OK for setting.

[1 Calling Function Preference] is default setting.

When selected [1 Calling Function Preference] and AF point switching dial is set at [SEL], Calling Function can be operated priority by the four-way controller.
(To switching the four-way controller to Selection AF point, press OK button.)

When selected [2 Select AF point Preference] and AF point switching dial is set at [SEL], selection of AF point can be operated priority by the four-way controller.
(To switching the four-way controller to Calling Function, press OK button.)